



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,041	03/29/2004	Frank M. Fago	073979.59	1450

27805 7590 09/03/2008
THOMPSON HINE L.L.P.
Intellectual Property Group
P.O. BOX 8801
DAYTON, OH 45401-8801

EXAMINER

CARPENTER, WILLIAM R

ART UNIT	PAPER NUMBER
----------	--------------

3767

MAIL DATE	DELIVERY MODE
-----------	---------------

09/03/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/812,041	Applicant(s) FAGO, FRANK M.	
	Examiner WILLIAM CARPENTER	Art Unit 3767	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7 and 9-35 is/are pending in the application.
- 4a) Of the above claim(s) 26-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7,9-25 and 35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 14-16, and 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 6,354,729 ("Brown").

Regarding Claims 1, 19, and 35, Brown discloses an apparatus for administering a suspendible agent in suspension, the apparatus comprising a delivery container (Figure 1) including the not pictured upstream feed reservoir holding a propellant fluid, in the instant case the fluid intended to be injected into the apparatus through port (13), an exit port (14), and a delivery mechanism operative for causing the propellant fluid to flow through the fluid path, in the instant case a combination of the pressure under which the fluid is introduced as well as the forces imposed by the interaction between the rotor (1) and the stator (4). Brown further discloses a suspension apparatus (1 and 4 in combination) disposed in the fluid path including a radial flow channel (8) and a plurality of circumferential flow channels (11) coupled in fluid communication by the radial flow channels, wherein said channels are capable of being filled with the suspendible agent and deliver the agent to the exit port after flowing through the radial flow channels and plurality of circumferential flow channels when the delivery mechanism is operated to cause the propellant fluid to flow through the fluid path.

Art Unit: 3767

Brown discloses that the suspendible agent to be delivered to the exit port via the apparatus may comprise any fluid or solid across all industries in all areas of fluid mixing, specifically including chemical, food, healthcare, medical, petrochemical, and polymer applications (Column 9, Lines 54-64). While the healthcare and medical industries would presumably include agents suitable for diagnosing and treating a medical condition, the food industry would also comprise suspendible agents that could treat medical conditions such as dehydration, starvation, or hypoglycemia. Additionally, while Brown does not explicitly reference an upstream reservoir there is a reasonable expectation that such a reservoir was contemplated for use with the device. Brown discloses that material to be mixed "enters through inlet 13 and is drawn radially through flow channels 5" (Column 4, Lines 18-21) and "material is **continually** pumped through the apparatus from inlet 13 to outlet 14" [formatting altered for emphasis]. This leads to the reasonable belief that the ports are intended to have a feeder reservoir/hopper upstream to "continually" provide agent to be mixed.

Regarding Claim 2, Brown discloses a plurality of circumferential dividing walls to define the circumferential flow channels (7).

Regarding Claim 3, Brown discloses gaps within the circumferential dividing walls as to define the radial flow channels (8).

Regarding Claim 14, Brown discloses that the dividing walls include irregularities (owed to their eccentric mounting) that cause the suspendible agent flowing within the flow channels to change direction (Figure 2).

Regarding Claims 15 and 20, Brown discloses that in an alternate embodiment (not pictured) the circumferential dividing walls may be concentrically arranged (Column 8, Lines 11-18).

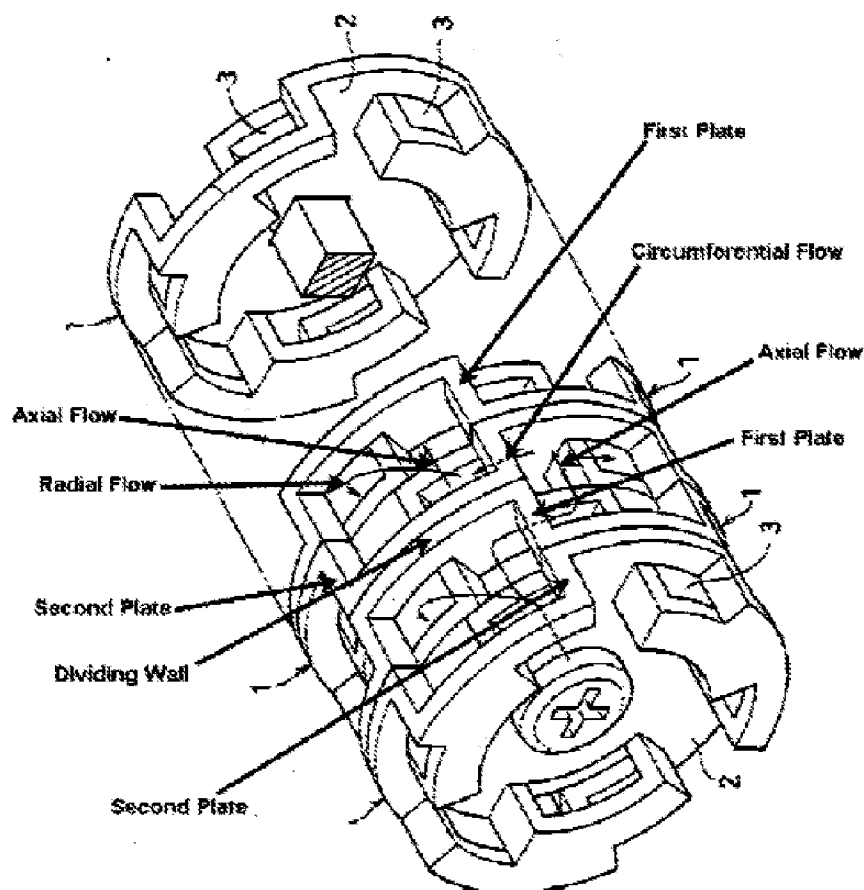
Regarding Claim 16, Brown discloses that the suspension apparatus includes a pair of first plates (1 and 4) said plurality of circumferential flow channels and said plurality of radial flow channels being distributed between the plates.

3. Claims 19, 21, and 23-25 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,368,382 ("Kawasaki").

Regarding Claim 19, Kawasaki discloses an apparatus for administering a suspendible agent in suspension, in the instant case concrete or cement (Column 1, Lines 9-13). Kawasaki discloses a delivery container comprising the combination of a cement pump (Column 3, Lines 29-31) and an external compartment comprising a feed pipe (4) having an exit port. Though not explicit, one reasonably expect and appreciate that the cement pump as taught by Kawasaki et al. has access to a reservoir, either integrally formed with the pump or as an extension of the delivery container apparatus in a second external compartment, further the pump itself or the feed pipe may be considered the reservoir. Kawasaki further discloses a suspension apparatus disposed within the fluid path (1) including radial flow channels (3; See attached figure) and a plurality of circumferential flow channels (2; See attached figure) coupled in fluid communication by the radial flow channels. Furthermore, it is believed to further be inherent that the necessary reservoir for the device contains a propellant fluid in the form of unmixed cement. Claim 19 does not require that the suspendible agent and

Art Unit: 3767

propellant fluid be of distinct compositions. It is important to note that the suspendible agent and propellant are not even part of the claimed work piece. The mechanism of action for the device of Kawaski includes a cement pump which induces a fluid to flow through the feed pipe (4) and through the suspension apparatus (1). In this manner the unmixed fluid induced to flow by the cement pump acts as a propellant fluid, forcing a quantity of mixed fluid temporarily disposed within the suspension apparatus (the suspendible agent) to be ejected from the apparatus via the exit port. In the instant case the external compartment/feed pipe is believed to be an extension of, and therefore a part of, the delivery container and as such the suspension apparatus is held to be positioned within the delivery container.



Regarding Claim 21, Kawasaki discloses an apparatus for administering a suspendible agent in suspension, in the instant case concrete or cement (Column 1, Lines 9-13). Kawasaki discloses a delivery container comprising a cement pump (Column 3, Lines 29-31) in combination with an external compartment comprising a feed pipe (4) having an exit port. Though not explicit, one would reasonably expect and appreciate that the cement pump as taught by Kawasaki has access to a reservoir, either integrally formed with the pump or as an extension of the delivery container apparatus in a second external compartment. Alternatively the pump itself or the feed pipe could be considered the reservoir. Kawasaki further discloses a suspension apparatus (1) disposed within the fluid path including a plurality of first plates (see attached figure) and second plates (see attached figure) with a stacked arrangement, with each pair of first and second plates being separated by a plurality of dividing walls (see attached figure) in part defining a plurality of circumferential flow channels capable of being filled with a contrast agent and configured to permit axial flow (see attached figure) between the plurality of circumferential flow channels. Furthermore, it is believed to further be inherent that the necessary reservoir for the device contains a propellant fluid in the form of unmixed cement or concrete. Claim 21 does not require that the suspendible agent and propellant fluid be of distinct compositions. The mechanism of action for the device of Kawasaki et al. includes a cement pump which induces a fluid to flow through the feed pipe (4) and through the suspension apparatus (1). In this manner the unmixed fluid induced to flow by the cement pump acts as a propellant fluid, forcing

Art Unit: 3767

a quantity of mixed fluid temporarily disposed within the suspension apparatus (the suspendible agent) to be ejected from the apparatus via the exit port. It is important to note that the suspendible agent, specifically the contrast agent, is not part of the claimed workpiece.

Regarding Claim 23, Kawasaki discloses that the suspension apparatus comprises a plurality of adjacent concentric circumferential flow channels to be coupled with one another via a plurality of radial flow channels (see attached figure).

As regards to Claim 24, Kawasaki et al. discloses that each of the pairs of first and second plates includes an axial flow channel to permit flow between adjacent sets of flow channels (see attached figure).

Regarding Claim 25, in the instant case the external compartment/feed pipe is believed to be an extension of, and therefore a part of, the delivery container. As such, the suspension apparatus is deemed to be positioned inside the delivery container.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,354,729 ("Brown") as applied to Claim 16 above.

Regarding Claims 17 and 18, Brown discloses the device substantially as claimed except that the device comprises more than two plates wherein a second plate is positioned between a pair of first plates. However, in an alternative embodiment (Figure 5) Brown discloses that the apparatus may be formed as a plurality of first plates with a plurality of second plates (25) sandwiched there between, the plates comprising axial flow channels (28) so as to allow the upstream and downstream surfaces of the plates to communicate. Brown specifically contemplates that the embodiment of Figure 1 could be modified by the increase of additional rotors and stators in order to increase the number of mixing stages (Column 8, Lines 45-49). As such, it would have been obvious for one having ordinary skill in the art at the time the invention was made to stack a plurality of rotor and stator stages of the embodiment of Figure 1, in the manner as illustrated in the embodiment of Figure 5, in order to provide the additional mixing stages contemplated by Brown. In doing so an arrangement of alternating first plates (4) and second plates (1) would be created, separating the plurality of circumferential flow channels and radial flow channels of each first plate from one another via a plurality of second plates having axial flow channels to allow communication between the plates.

6. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,368,382 ("Kawasaki") as applied to Claim 21 above.

Regarding Claim 22, Kawasaki discloses the device substantially as claimed except for explicitly disclosing that the ratio of volume of the flow channels to a volume occupied by the dividing walls is from approximately 0.25 to approximately 0.5. However, it would have been obvious for one having ordinary skill in the art at the time

Art Unit: 3767

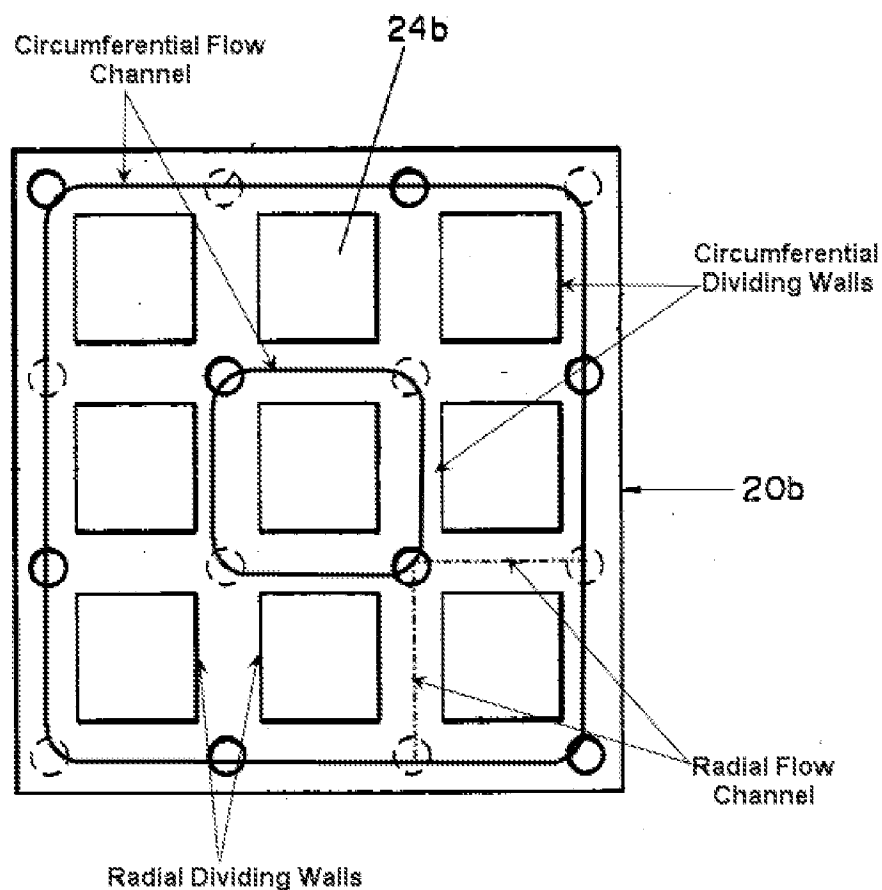
the invention was made to form the ratio of fluid flow channels to dividing walls of the device of Kawasaki to be within the range of 0.25 to 0.5, since it has been held that discovering the optimum or workable range of a result effective variable involves only routine skill in the art.

7. Claims 4-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,137,369 ("Hodan") in view of US Patent No. 4,869,849 ("Hirose").

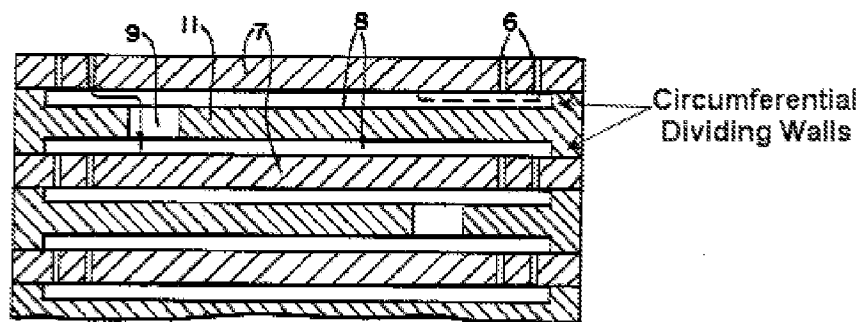
Regarding Claims 4, 11, 12, and 13, Hodan discloses an apparatus for administering a suspendible agent in suspension comprising, a delivery container (12, 14, and 16 in combination) including a fluid reservoir (11) capable of holding a propellant fluid, an exit port (17), a fluid path between the fluid reservoir and the exit port, and a delivery mechanism (in the instant case the pressure of introduced fluid in combination with gravity) operative for causing said propellant fluid to flow through the fluid path. Hodan further discloses a suspension apparatus (14) disposed in the fluid path, the suspension apparatus including a radial flow channel (see attached figure) and a plurality of first plates (20a, 20b, and 20c) carrying a plurality of circumferential dividing walls (24) defining a plurality of circumferential flow channels (see attached figure) coupled in fluid communication by the radial flow channels, said flow channels capable of being filled with a suspendible agent and in fluid communication with the exit port. In the instant case the term "circumferential" is afforded its broadest reasonable interpretation as "the external boundary or surface of a figure or object" and "radial" is defined as "arranged as to gravitate towards or away from the center of a figure or object". As such the terms "radial" and "circumferential" do not necessitate that the body

Art Unit: 3767

be circular. However, should Examiner's arguments not be found persuasive, it would have been obvious for one having ordinary skill in the art at the time the invention was made to form the apparatus of Hodan to be of a circular configuration as it has been held that a mere change in shape barring any showing of unexpected results requires only routine and customary skill. Hodan discloses that the device is configured such that the suspendible agent would flow to the exit port through the radial and circumferential flow channels when the delivery mechanism is operated to cause the propellant fluid to flow through the fluid path. Hodan discloses that the first plate includes opposed upstream (visible in Figure 1) and downstream (side not visible) surfaces and an axial flow channel (25) extending between the upstream and downstream surfaces.



What Hodan fails to explicitly disclose is that the upstream and downstream surfaces comprise the plurality of dividing walls, only illustrating the upstream surface to include said walls. However, Hirose discloses a similar mixer that comprises a stacked configuration of plates (11) having circumferential dividing walls (see attached figure) on both the upstream and downstream surfaces. To achieve a fluid tight fit Hirose discloses pairs of flat second plates having axial flow channels (6) sandwiching the first plates (Figure 4) which in combination with another first plate sandwiches the second plates (Figure 4). It would have been obvious for one having ordinary skill in the art at the time the invention was made to utilize a configuration of first plates having opposed upstream and downstream dividing walls sandwiched between second flat plates, as disclosed by Hirose, in place of the plates only having circumferential dividing walls on the upstream surface of the device of Hodan, thereby only achieving the expected results of substituting one well-known configuration for another. It would have further been obvious for one having ordinary skill in the art at the time the invention was made to form the plates of the device of Hodan to be of a circular configuration, as such a configuration is well-known as exemplified by Hirose.



Regarding Claim 5, Hodan discloses that the islands that form the circumferential dividing walls also contain sides that form radial dividing walls intersecting the circumferential dividing walls for blocking the flow channels and diverting fluid flow through the radial flow channels (see attached figure).

Regarding Claim 7, Hodan discloses that the axial flow channels couple the upstream and downstream surfaces of the plates to which, as per the disclosure of Hirose, would have been obvious for one having ordinary skill in the art at the time the invention was made to add circumferential dividing walls, thereby forming circumferential flow channels.

Regarding Claims 9 and 10, Hodan discloses that axial flow channels may be located adjacent to a center of the first plate (25b) or adjacent a peripheral edge (25a) of the first plate.

Response to Arguments

8. Applicant's arguments filed 21 June 2008 have been fully considered but they are not persuasive.

In the instant case the term "suspension" is afforded its broadest reasonable interpretation as "the state of a substance when its particles are mixed with but undissolved in a fluid or solid", the term "suspendible" is interpreted as "capable of being placed in a suspension with a second undisclosed substance", and the term "propellant fluid" is interpreted as "a fluid capable of driving forward or onward or as if by means of a force that imparts motion."

As regards to Applicant's argument directed that cement paste is not a suspension, it is important to note that Claims 19 and 21 do not positively require a suspension nor even a suspendible agent. These claims only recite functional language drawn to the capability of the device to deliver a suspendible agent in suspension. Similarly the claims do not positively require a contrast agent as part of the claimed workpiece as alleged by Applicant. It is held that apparatus of Kawasaki is capable of delivering a suspendible agent in suspension, particularly a contrast agent. Furthermore, cement paste is indeed a suspension comprising a mixture of cement and silica fume in water (Figure 8). Kawasaki discloses that discrete balls of cement are present within the water leading to the conclusion that the cement is not completely dissolved, thereby qualifying it as a suspension.

As regards to Applicant's arguments that the device of Kawasaki does not teach "dividing walls", Kawasaki does indeed disclose partitions (generally 6) which as a result of three dimensional thickness qualify as dividing walls in both the radial and circumferential directions. Examiner's interpretation should not be bound by only the terminology used in the prior art, but rather that which would be apparent to one having ordinary skill in the art. Examiner's figures are labeled in order to highlight the already present structures that are provided their broadest reasonable interpretation.

As regards to Applicant's argument that Brown does not disclose an apparatus including a fluid reservoir, as iterated above, while not explicit, Brown does provide a reasonable expectation that an upstream feeder reservoir/hopper is contemplated for use with the device. Brown discloses that material to be mixed "enters through inlet 13

Art Unit: 3767

and is drawn radially through flow channels 5" (Column 4, Lines 18-21) and "material is **continually** pumped through the apparatus from inlet 13 to outlet 14" [formatting altered for emphasis]. This leads to the reasonable belief that the ports are intended to have a feeder reservoir/hopper upstream to "continually" provide a material to the apparatus. In the instant case the term "continually" is interpreted as per its customary definition as "without cessation or intermission unceasingly; always". Simply because Applicant can conceptualize a scenario where the device of Brown could be modified to be used with an upstream reservoir does not alter the implied upstream reservoir necessary so that materials may be introduced in a continual manner. Examiner is allowed to rely upon the entirety of the disclosure, both explicit and implicit.

As regards to Applicant's argument that the propellant fluid would be mixed with the suspendible agent in the device of Brown, such a limitation prohibiting the mixing of fluid could not be found in the claims. As a suspension is defined as "the state of a substance when its particles are mixed with but undissolved in a fluid or solid" such mixing is in fact faithful with the intent of the claims to provide a suspendible agent in suspension. Further while the forces generated by the rotor and stator are the primary means for delivering the fluid from the inlet to the outlet, the continual introduction of fluid into the system would aid in displacing the fluid already contained within the system thereby acting a propellant fluid delivering the mixed suspendible agent to the ext port. It is important to note that a "propellant fluid" is not a positively claimed part of the workpiece in Claims 4, 19, or 35.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. As the subject matter of Claim 6 was previously indicated as allowable subject matter but now stands rejected this action is Non-Final.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM CARPENTER whose telephone number is (571)270-3637. The examiner can normally be reached on Monday through Thursday from 7:00AM-4:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Simons can be reached on (571) 272-4965. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/812,041

Page 16

Art Unit: 3767

/William Carpenter/

Examiner, Art Unit 3767

08/25/2008

/Kevin C. Sirmons/

Supervisory Patent Examiner, Art Unit 3767